

(The witness withdrew)

An Outline of the Social Physics of Coal Mining in Colonial India, ca 1900-1947.¹

NB: This paper was published as an article entitled (The witness withdrew): An Outline of the Social Physics of Coal Mining in Colonial India, ca 1900-1947, in *The Modern Worlds of Business and Industry: Cultures, Technology, Labor*; by Karen Merrill (ed), Brepols, 1998, for the Davis Center for Historical Studies, Princeton University

If a chunk of coal falls

My head will be smashed

God knows what is due

Oh ! This is what I think !

From the folk song 'We Sad Coalcutters', by Ghugu Mahto.²

NM Joshi (nominated, Labour): May I ask whether the miners in Jharia will be represented in the conference... ?

Sir Frank Noyce, Member for Industries and Labour: No Sir. This conference will consist solely of experts.

Joshi: May I ask whether the representatives of miners are not expected to know something about the conditions in mines?

¹ This is a revised version of the paper I delivered to the Davis Center seminar on January 13, 1995. I owe thanks to the Davis Center, the Firestone Library and Inter-Library Services for enabling my research; and Falguni Sen, Sumit Guha, and Madhu Sarin for their comments. The term 'social physics' was used by Nicholas Dirks commenting on my presentation at Ann Arbor in May 1993. The *Report of the Labour Enquiry Commission* (1896), will be referred to below as *RLEC*; the *Report of the Coalfields Committee* 1920, as *Foley*; the *Treharne-Rees Report*, 1919, as *Rees*; the *Report of the Coal Mining Committee* 1937 (Burrows), as *CMC*; the *Report of the Indian Coalfield's Committee* 1946 (Mahindra), as *ICC*; the *Report on an Enquiry into Conditions of Labour in the Coal Mining Industry in India* (1946, S.R. Deshpande), as *Deshpande*; and the *Transactions of the Mining and Geological Institute of India* as *TMGI*. Unless followed by 'NAI' (National Archives of India), 'File' references are from the Bihar State Archives. Abbreviated dates begin with the day. GOI stands for Government of India; *RCL* for the Royal Commission on Labour (1931); *COI* for the Census of India and *BLEC* for the Bihar Labour Enquiry Committee (1940). Some of the material used here has been extracted from my book, *The Politics of Labour Under Late Colonialism: Workers, Trade Unions and the State in Chota Nagpur, 1928-1939*, New Delhi, 1995.

² From 'A Study of the Labour Movement in Jharia Coalfield 1900-1977'; unpub. thesis, Calcutta Univ. 1992; by Ranjan Kumar Ghosh.

Noyce: No Sir. I doubt whether the representatives of miners are in a position to deal with the prevention of fires...³

The mate knew a great deal. He had worked in this mine a good ten years. And he knew just about everything of number ten shaft. Then why had he knowingly acquiesced...? Why hadn't he refused to broaden the gallery? To snatch away the lives of so many of his men, why hadn't he refused? But refusal was not part of his nature. He had learnt the price of refusal in these ten years. A simple price: dismissal... From *Ek Mazdur Ki Maut*, by Manmohan Pathak.⁴

Unaccountable Events and Forgotten Testimonies

On January 30, 1936, 5 Europeans and 32 Indians died in a gas explosion in the Loyabad colliery of Managing Agents Bird & Co., in the Jharia coalfield in eastern India.⁵ The Associated Press correspondent described the rescue efforts, which were abandoned after extricating 30 men:

The relief parties showed the utmost heroism, and repeated efforts were made to rescue victims who were brought out on the backs of the rescuers. Heartrending scenes were witnessed at the pitmouth where many women were present... A strong police picket was posted to keep under control the large crowd... Pathetic scenes were witnessed at the hospital where doctors from the adjoining coalfields treated the injured, many of whom suffered from gas-poisoning.⁶

On 6 February 1936 the Member for Industries and Labour informed the Central Legislative Assembly that there were 45 fires burning in Jharia, and admitted the "necessity for stiffening the mining regulations".⁷ At a condolence meeting in Jharia Sir

³ GOI, *Legislative Assembly Debates*, 2/2/36, vol. 1, p. 292.

⁴ Published as 'The Death of a Worker' in *Fourth World Dynamics: Jharkhand*, by Nirmal Sengupta (ed), Author's Guild Publishers, Delhi, 1982.

⁵ *Searchlight*, (Patna), 2/2, and 5/2/36. Higher estimates given by the GOI were 40 killed and 83 hospitalized (ibid, 9/2/36). See also *CMC*, p. 34.

⁶ *Searchlight*, 2/2/36.

⁷ GOI, *Legislative Assembly Debates*, 1936, vol 1., pp. 289-291; Local officials reported 42 fires in 133

Edward Benthall, member-to-be of the Viceroy's wartime Executive Council, took a broad view. Announcing the Agents' intention to erect a monument to the dead, he said:

I am committing no impropriety in saying that, in our opinion, this tragedy was in no way due to any act or error of judgement or neglect for which any one of our mining staff was responsible. It was, in our opinion, an accident, pure and simple, unaccountable so far, for which no one can be blamed.⁸

Benthalls' propriety notwithstanding, the Department of Mines asked collieries to remove inflammable material, and the enquiry report called for the mine to be equipped with hosepipes, sand and a telephone system.⁹ Throughout that year, instances of crashing pillars and subsidences continued, as they had done for the past decade. The fire underneath Jharia town had first come to notice in November 1930, with a subsidence which had buried a businessman in the debris of his house, and destroyed a hosiery mill. In 1931 and 1932, there were gas emissions and subsidences, despite efforts by the Mining Department and the Railways to douse the blazing pits. In January 1933, a reporter saw flaming fissures, and people leaving their homes.¹⁰ The Bihar earthquake of January 1934 enhanced air circulation inside the mine. In April 1935, new fissures were being packed with earth,¹¹ but by October the fire had spread into an adjacent colliery whence volumes of smoke reached Jharia town.¹² An observer in 1938 saw colorful flames emanating from the ground, and learnt that the owner of the burning seam had chosen to stay on in his house which had also collapsed.¹³

working mines: *Searchlight*, 24/1/36.

⁸ *Searchlight*, 9/2/36.

⁹ *Searchlight*, 28/2/36, and 5/7/36.

¹⁰ *Searchlight*, 13/1/33: "Fire in Jharia Collieries - An Alarming Situation - Danger to Jharia Town.": Report dtd 9/1/33.

¹¹ *Searchlight*, 28/4, and 19/7/35; and 'Fire at Jharia', in *TISCO Review* (Tata Steel Archives) March 1934, p. 145.

¹² *Searchlight*, 4/10/35; and 8/12/35.

¹³ Mukutdhari Singh, *Bhuli Bisri Kariyan*, Patna, 1978, vol 2, p. 17.

On December 18 an explosion in Andrew Yule's Poidih colliery in the adjacent Asansol coalfield killed three persons on the surface and trapped 207 persons, including 63 women and the European manager. Metal cages shot out from pits 770 and 755 feet deep, destroying equipment on the surface. By the 20th officials began sealing the mine. The loss of life was the heaviest in any mining disaster in India till then.¹⁴ Were all these events fortuitous? Is a historical accounting of them possible?

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Evidence of witness number 44: `Ahalya, a woman worker in the Loyabad colliery, was examined and made the following statement: - I have been working in this mine for the last 10 or 12 years. My husband was a blacksmith working in a different mine, and when he died, I came and found employment here. My duties are to carry coal from the depot to the smithy shop. Being old I cannot work very hard. I have another woman to assist me, and we both earn 6 annas a day. I work from 6 to 12 in the morning and again from 2 till dusk. I live in one of the dhowras here. I have no children. I live alone. I do not get any blankets or cloth free. (The witness withdrew).¹⁵

That last phrase rounded off scores of depositions before the Royal Commission on Labour in 1929-30, as it did the abrupt passage of Ahalya across the historical record. It also serves as a metaphor for official inquiries whose reports disappeared into archives with meagre results. Thus, the Coalfields Committee Report of 1920 noted that the 1896 Labour Enquiry Committee's recommendations on labour supply were not implemented; and the successive repetitions of observations by the 1930 Royal Commission on Labour, the 1937 Coal Mining Committee, the 1940 Bihar Labour Enquiry Committee and the 1946 Indian Coalfield's Committee suggested that structural features and working conditions in the coalfields had not changed.¹⁶ What

¹⁴ *Searchlight*, 22/12, 20/12, and 25/12/36.

¹⁵ *RCL*, vol 4, part 2, p. 127.

¹⁶ *Foley*, ch. 5; *RCL*, vol 1, pp. 115, 118-122, 134; *CMC*, p. 17; *BLEC*, vol 1, p. 206; *ICC*, Appendix 1: 'Principal Recommendations of the Previous Committees and the Action Taken'.

were the reasons for this inertia?

Reflections on Use-Value and Culture

The history of enterprises may be approached from several directions: their role in the industrial revolution; the social context of their operations; or their entrepreneurship and labour relations. Such research also prompts considerations about transport in the development of capitalism; fuels and the economic process; geographic influences in history; and economic imperialism.¹⁷ One way or another, studying the historical articulation of world-economic developments in different societies fosters an outlook which lies beyond 'economics'.¹⁸ The history of Indian coal is relevant to these issues. This study will consider forms of capital and the organization of work in Indian coal mines; and, by placing their physiognomy in social context, will attempt to cast a different light upon aspects of mining which appear to be of a purely physical character.

Certain distinctive features of mining bear mention. The extractive sphere, being more immediately dependent upon nature, sets extra-economic limits upon the 'normal' play of competing capitals; and allows for the emergence of monopolies linked to pit locations and the natural properties of the extracted commodity. These influence productivity and profit rates. Mines are not urban industries and as wasting assets, the drive for increased 'production' simply requires new mines. They are best worked to exhaustion, for stoppages increase the risks of flooding, collapses and coal losses. The recession of the workforce, and physical obstructions require continuous inflows of capital and widespread units complicate transportation.¹⁹

¹⁷ See J. Martinez-Alier, *Ecological Economics - Energy, Environment and Society*, Oxford, 1987; N. Georgescu-Roegen, *The Entropy Law and the Economic Process*, Cambridge, (Mass.), 1971; and *Energy and Economic Myths: Institutional and Analytical Economic Essays*, Oxford, 1976; J.E. Vance Jr, 'Transportation and the Geographical Expression of Capitalism', in E.D. Genovese and L.H. Hochberg, (ed); *Geographic Perspectives in History*, Oxford, 1989.

¹⁸ In *The Entropy Law*, p. 342, Georgescu-Roegen dwells upon economists' hostility towards the insertion of notions such as *Geist* and *Weltanschauung* into the discipline by their German colleagues. In *Energy and Economic Myths*, (p. xii), he remarks: "The 'utility function of a peasant contains not only the amounts of commodities available to him, but also his actions as judged by the cultural matrix of the village".

¹⁹ 'Special characteristics of the coal Industry', A.B. Ghosh, *Coal Industry in India*, Delhi, 1978, pp. 52-56; and Mohssen Massarrat, 'The Energy Crisis: The Struggle for the Redistribution of Surplus Profit from Oil', in *Oil and Class Struggle*, by Petter Nore and Teresa Turner, London, 1980, p. 28-39. Applying Marx's theory of ground-rent to the production of energy commodities, Massarrat argues that favourable

Collieries require constant attention (apart from water pumping and timbering) to monitor the chemical content of the coal, its friability and types of gas, etc. High moisture and volatile content conduce to oxidation and spontaneous combustion - in this respect Jharia's seams were slightly less prone than those of the adjacent Raniganj series, but made up for it by a superior calorific value and proportion of fixed carbon. The depth, inclination and thickness of seams and strata determine mining strategies. Jharia's were "difficult and dangerous": shallow, steeply inclined, gassy and congested with 18 seams close to one another, some of them 60 to 80 feet thick. In one sector there are 63 feet of coal in 145 feet of strata. Thick seams require 'pillar and stall' extraction - galleries being forced into the seams, with pillars left in between to be removed in the secondary stages. By the 1930's, pillars were contributing more coal than galleries in Jharia, where unsystematic technique led to the formation of pillars of great height, more liable to heating and collapses.²⁰

The term 'social physics' is meant to denote the fusion of the material-technical with the social aspects of production. The process of raising coal was embedded in a nexus linking the state, rentiers, commercial houses and railway companies, to contractors, village headmen, and peasants. Their interaction was part of a historically composite situation, and hence our study implies attention to 'culture'. Commenting on the 'necessary' requirements of the labourer, Marx suggested that social needs and the manner of their satisfaction depended upon the 'level of civilisation' of a country and the 'habits and expectations' of its 'free labourers'. He continued:

In contrast, therefore, with the case of other commodities, the determination of the value of labour-power contains a historical and moral element.²¹

Such factors determined forms of enterprise and constant capital too, since the

natural conditions allow capitals with the worst technical composition to earn the average profit, and determine the market price - p. 30.

²⁰ CMC, pp. 12-20, 35-49.

²¹ Karl Marx, *Capital*, vol. 1, Penguin, London, 1976, p 275.

`historical and moral element' contributed to an overall social context within which specific types of enterprise, technique and production relations were developed and sustained. Let us see what elements determined labour-power in Jharia's collieries and how they acted upon the industry as a whole.

The Strategic Context

Cheap fuel commodities were essential to the emergence of industrial societies.

Without them the uses of steam would have been unthinkable. And the relationship was symbiotic, for "it was the challenge of pumping water out of deep mines - in an age when mines were becoming economically important - that turned the search for steam power from a diversion into a necessity".²² Coal received patchy treatment in economic histories of India. Romesh Dutt gave it one paragraph at the turn of the century. Gadgil, Anstey and Buchanan's monographs in the 1920's and 1930's gave it some attention. The Cambridge History contains passing references to coal, in essays on Income and the Railways.²³ In a symposium on railways, Abramovitz noticed that they provided cheap transport for minerals, but passed over their source of energy.²⁴ Thorner's contribution did theorise the railway system, but attached no intrinsic significance to coal. Macpherson recognised the interest of Government as mine-owner and guarantor of the railways: "Fuel figured prominently in working costs... the first section of the EIR was to Raniganj... the opening up of mineral deposits was the reason behind several branch lines".²⁵ It was only in the 1970's that colonial coal extraction was subjected to

²² Asa Briggs, *The Power of Steam: An Illustrated History of the World's Steam Age*, London, 1982; p. 19.

²³ R.C. Dutt, *The Economic History of India*, vol 2, 1903, reprinted, Delhi, 1963, p. 383; D.H. Buchanan, *The Development of Capitalistic Enterprise in India*, New York, 1934; Vera Anstey, *The Economic Development of India*, London, 1929; D.R. Gadgil, *The Industrial Evolution of India in Recent Times*, 1924, reprinted, Bombay, 1971, pp 58-59, 78-79, 88, 109-112, 275-281; Dharma Kumar (ed), *Cambridge Economic History of India* (hereafter *CEHI*), Cambridge, 1983, vol 2, pp. 444; 749-750, and p. 758; and A.K. Bagchi, *Private Investment in India*, Delhi, 1972, pp 163-164, and 176-177.

²⁴ Moses Abramovitz, 'The Economic Characteristics of Railroads and the Problem of Economic Development', in 'Symposium - The Patterns of Railway Development'; *The Far Eastern Quarterly*, vol 14, no 2, 1955.

²⁵ Thorner stressed that the great networks were built in order to intermesh the economies of Britain and India: Daniel Thorner, 'The Pattern of Railway Development in India' - in Symposium (ibid), p. 201; W.J. Macpherson, 'Investment in Indian Railways, 1845-1875', in *Economic History Review*, London, vol 8, no 2, December 1955, p 178.

some careful research.²⁶

The royal Charter Acts of 1813 and 1833 threw open the 'East India' trade to private traders. Novel patterns of commerce combined with the English Industrial Revolution to transform India into an exporter of indigo, tea and opium, and an importer of textiles by the 1830's. The steam engine appeared in mints, baling presses, tugs and riverine trade. By the late 30's a steam flotilla was operating on the Ganga, and a decade later steam vessels were plying coastal routes.²⁷ Extraction of Raniganj coal began in 1814, but expanded slowly. Meanwhile rail construction was promoted by businessmen interested in selling textiles and importing cotton, and shipping companies which needed coal supplies at Indian ports.²⁸ From 1855 the rail lines to the coalfields led to a surge in output.²⁹ In the aftermath of the 1857 revolt, railway investment was accelerated, with the GOI underwriting profits. Partly for famine management, but mainly for military reasons, it authorised lines to strategic points, and in anticipation of future disturbances, directed them away from urban business districts. In the 'battle of the gauges' during the 1870's, the military secured a 5'6" broad gauge for the northern border connections, leading to the installation of cumbersome multiple gauge systems.³⁰ Jharia was geologically surveyed in 1866 and 1887, but it was only after the

²⁶ See C.P. Simmons, 'Indigenous Enterprise in the Indian Coal Mining Industry, c. 1835-1939; and 'Recruiting and Organising an Industrial Labour Force in Colonial India : The Case of the Coal Mining Industry, c. 1880-1939'; in *Indian Economic and Social History Review*, (hereafter *IESHR*), vol 13(2), and 13(4), 1976; and the essays by Henner Papendieck, and Dietmar Rothermund in D. Rothermund and D.C. Wadhwa, *Zamindars, Mines, and Peasants*, Manohar, New Delhi, 1978.

²⁷ R.S. Rungta, *The Rise of Business Corporations in India 1851-1900*, Cambridge, 1970, ch. 1; Morris D. Morris, in *CEHI*, pp 563-564, 'The Growth of Large-Scale Industry'. In 1840, there were five private and nine government owned steam boats on the Ganga: Blair Kling, *Partner in Empire: Dwarkanath Tagore and the Age of Enterprise in Eastern India*, Berkeley, 1976, p. 99.

²⁸ Daniel Thorner, 'The Pattern of Railway Development' - in 'Symposium', p. 203. In *Investment in Empire: British Railway and Steam Shipping Enterprise in India 1825-1849*, University of Pennsylvania Press, Philadelphia, 1950; p. 23, Thorner noted: "the East Indian Railway from Calcutta to Delhi, began as little more than an extension of the Peninsular & Oriental Steam Navigation Company (the celebrated P & O)... The struggle for governmental aid to steam shipping was, in many respects, simply a dress rehearsal of the later and greater campaign for the introduction of railways into India."

²⁹ *CMC*, p. 9.

³⁰ Daniel Thorner, 'The Pattern of Railway Development' - in 'Symposium', pp. 204-209; John M Hurd, in *CEHI*, p. 742. "Defense needs and fear of Russia thus eventually triumphed over economy and financial considerations" wrote W.J. Macpherson, in 'Investment in Indian Railways' (p. 186). "The Government wanted railways for social, economic and perhaps mainly military reasons".

East Indian Railway's (EIR) technical survey of 1890 that extraction began, heralded by track extensions there in 1894-95. In 6 years, output rose from 1500 to 2 million tons, after which it became the most productive field in the country.³¹

Managing Agencies, Coal and Colonialism.

Early in the 19th century, Agency Houses were the main form of the colonial commercial enterprise, accumulating and investing the fortunes of English gentlemen in finance, shipping and farming.³² After their collapse in the thirties, the Managing Agents (as their successors became known), began controlling joint-stock associations by proxy. The Bengali trade-agent and *zamindar* (landowner), Dwarkanath Tagore initiated this transformation in 1836, when he led Carr, Tagore & Co., into a partnership over the Calcutta Steam Tug Association. A few weeks prior to this he had bought India's largest coal mine in Raniganj, whose products were consumed in large part by the steam boats of the public company.³³

From mid century, the Agents' locus of control shifted to London. English cartels such as the P & O's Calcutta Conference and the Indian Jute Mills Association emerged, and trade came under the interlocking control of these and the Managing Agencies. From 1890 to 1920 the number of coal companies in Bengal and Bihar increased from 6 to 227.³⁴ In 1911, seven major Agents controlled 55% of the jute, 61% of the tea, and 46% of the coal companies.³⁵ Annual all-India coal production increased from 4.7 million tons during 1896-1900, to 11.5 m tons in 1906-10, 19.3 m tons in 1916-20, and 23.8 m

³¹ CMC, pp. 9-10. Bihar was part of the province of Bengal until 1912.

³² See R.S. Rungta, *Business Corporations*, ch. 1; S.K. Basu, *The Managing Agency System in Prospect and Retrospect*, World Press, Calcutta, 1958. ch 1; and Rajat Ray (ed), *Entrepreneurship and Industry in India*, Oxford University Press, Delhi, 1994; pp. 19-24, 30.

³³ Blair Kling, 'The Origins of the Managing Agency System', in Rajat Ray (ed), *Entrepreneurship and Industry*, See also Kling, *Partner in Empire*, chapters 5 & 6. Tagore's first mine was abandoned due to an underground fire caused by de-pillaring and spontaneous combustion: p. 96.

³⁴ Henner Papendieck, 'British Managing Agencies in the Indian Coalfield', in Rothermund and Wadhwa, *Zamindars*, p. 184. From 1890 till 1918, Indian coal production increased tenfold, capital invested in coal twelvefold, and the size of the workforce fivefold (p. 175). Also see Bagchi, *Private Investment*, pp. 163-164, 176-179; and Rajat Ray *Entrepreneurship and Industry*, pp. 30-36, 47.

³⁵ Bagchi, *Private Investment*, p. 176. They were Andrew Yule, Bird, Shaw Wallace, Williamson Magor, Octavius Steel, Begg Dunlop, and Duncan Bros.

tons in 1930.³⁶

Railways and metallurgical industries grew rapidly. The former consumed a third of the output, (a proportion that remained stable for most of our period), increasing their demand from under a million tons in 1893 to 7.4 m tons in 1928 and 7.5 m tons in 1936.³⁷ The pattern of rail networks had long term effects. By charging relatively low freight rates for long-haul bulk goods to and from the interior and the great port towns, they rendered internal trade more expensive than foreign.³⁸ The railway companies fought freight wars and sharpened zonal boundaries, preventing network integration. And the EIR used its monopoly to charge high rates for coal deliveries to Calcutta.³⁹ Until 1914, this tendency combined with the impact of the Suez Canal to render British and South African coal cheaper in western and southern India, where a demand was growing on account of the railways and the nascent textile industry.⁴⁰

The War enabled Indian companies to capture the home market. However, cheap extraction held few advantages for most Indian consumers. Even jute mills managed by the same Agents as were the collieries might purchase coal at inflated rates.⁴¹ Agents transferred profits from one company or industry to another, directed by the financial branches at their core. Their remuneration was based on commissions: on gross proceeds, total raisings, or dividends paid. This system tended to "focus effort on immediate rather than future gain, it being remembered that these managing agents

³⁶ Ghosh, *Coal Industry*, pp. 278-280.

³⁷ B.R. Seth, *Labour in the Indian Coal Industry*, D.B. Taraporevala, Bombay, 1940, p. 8; and *RCL*, vol 4, part 1, p. 242. Metallurgy consumed 24.2% of the coal produced in 1927, jute & textile mills 8.2% between them. The 1946 report puts railway consumption figures at 6.3 m tons in 1920, 7.0 in 1928, and 7.4 in 1935: *ICC*, p. 298. See Table I.

³⁸ John M Hurd, *CEHI*, p. 752. See also *CEHI*, pp. 752-758; and D. Thorner, 'The Pattern of Railway Development.' - p. 208.

³⁹ The Agents claimed that coal contributed more to tonnage hauled than to profits earned. Given its freight structure, the EIR was making a concession to coal. See *CMC*, 91-92.

⁴⁰ John M Hurd, *CEHI*, pp. 752-758. The EIR's share of track in 1897 was 9%, but it garnered 23% of total railway earnings. Sometimes the popularity of foreign coal was due to unreliable grading by the Bengal collieries. In 1925 a Coal Grading Board was set up to standardise grades exported from Calcutta to Indian and foreign ports: *CMC*, 73-77.

⁴¹ D. Rothermund, *An Economic History of India*, Routledge, London, 1993, pp. 59-60, 68.

also control... industrial concerns which benefit by cheap fuel".⁴² The practice of calculating net profits (of the coal companies) before deductions for depreciation and reserve funds, rendered Agency management detrimental to the collieries.⁴³

Writing about the commercialist bent of European capital in India, one historian remarked upon its coal interest as "the one exception to this colonial bias", without explaining it.⁴⁴ If we consider the importance of the steam engine for the colonial project and the structural features of the Agencies, the issue becomes clearer. Managing Agencies were a microcosm of the system. Their commercial operations as well as their control over coal meshed with the novel geography of transportation that characterised the Industrial Revolution, with its need to link the core to the periphery.⁴⁵ By 1928, British-controlled coal companies (which combined in the Indian Mining Association - IMA - in 1892), accounted for 60% of Indian output.⁴⁶ In 1944 this had risen to 70.6%, with the Railways' captive collieries accounting for another 11.5%.⁴⁷ A system had emerged in which the geo-strategic and economic elements had blended together.

Indian Property in the Coalfield.

The Permanent Settlement of 1793 granted perpetual land rights to the *zamindars* of Bengal. Their estates became arenas of conflict during the following decades, and underwent sub-infeudation or the fragmentation of tenures. There were seven estates in the sub-division where the Jharia coalfield lay. One of the cesses exacted by the landlords from new tenants or leasees was known as *salami*, which became a lucrative source of rentier income with the opening up of the collieries.⁴⁸

⁴² CMC, p. 28. It was the Agents who benefitted - DS.

⁴³ Henner Papendieck, 'British Managing Agencies', p 190-192. There were marked and arbitrary differences between coal prices quoted for independent and associated buyers : pp 204-212.

⁴⁴ Rajat Ray (ed), *Entrepreneurship and Industry*, p. 34.

⁴⁵ See J.E. Vance Jr, 'Transportation', in Genovese and Hochberg (ed) ; *Geographic Perspectives*, p. 119.

⁴⁶ RCL. vol 4, part 1, p. 242.

⁴⁷ ICC, p. 116.

⁴⁸ See D.C. Wadhwa, 'Zamindaris at Work (1793-1956)' pp. 86-92; and 'Zamindars and their Land', pp. 93-130; in Rothermund and Wadhwa, *Zamindars*.

Continuing a bias towards landed interests, the GOI in 1880 recognised their title to mineral rights, anticipating that they would supervise coal extraction. However, the 1920 report found that protective provisions were absent or not enforced and asked for regulated leasing.⁴⁹ The 1937 report remarked that lured by large sums of ready money, the *zamindars* had left the future to "look after itself". Their policy of demanding secondary *salami* payments for depillaring fostered reckless extractions in the first workings; and their greed for gratuity payments led to the subdivision of estates into numerous irregularly shaped leases. This exacerbated malpractices by small companies, such as the opening of multiple shafts to save on underground roads, and the avoidance of conservation. (Jharia had a large number of shallow workings, with little or no machinery and susceptible to market fluctuations.) The 1937 report reiterated the recommendation on leasing, as did the report of 1946, which, apart from criticising *salami*, noted that "small dimensions and fantastic shapes" were also the consequence of estate boundaries set by the Revenue Department. It recommended the abolition of private property in mineral rights in the *zamindari* areas.⁵⁰

Indian coal enterprise experienced a revival when Jharia opened up. From 1900 to 1947 its share grew from one-fifth to one-third, a process marked by tremendous fluctuations. Half the working collieries of the inter-war period were tiny Indian-owned companies, whose share in production was about 5%.⁵¹ They mined small quantities of low-grade coal from labour-intensive shallow workings, (including the so-called 'wagon mines'), were quickly opened and wound up, and competed ferociously. Combining in the Indian Mining Federation (IMF) in 1913, they prospered in the post-war boom, mining over a third of output. Hard hit by the mid-twenties slump, their output share underwent a 10 % decline by 1929. Internecine strife bred the Indian Colliery Owners' Association (ICOA) in 1934. The two bodies often asked for state-regulated prices, but such a course conflicted with the cost-cutting interest of the chief

⁴⁹ *Foley*, para 8.

⁵⁰ *CMC*, pp. 31, 69-71; *ICC*, pp. 134, 273-274.

⁵¹ *Simmons*, 'Indigenous Enterprise', p. 204.

customer, the Railway Board.⁵²

Labour Recruitment and the uses of Ethnography

*Anything in the nature of scarcity in the neighbouring districts is a blessing to the coal-field.*⁵³

Some 125,000 persons were engaged in Jharia in the 1920's and '30's.⁵⁴ They included miners, enginemen, carpenters, drillers and shot-firers, boilermen, coal carters, ash-cleaners, power-house men, coke-processors and horse-boys. Census data for Jharia reveal a preponderance of 'aboriginals' (48.8%); 'Depressed Classes' (20.2%); and peasant or artisan castes (22%).⁵⁵ The first two contributed 94% of the coalcutters. 78% of the overmen and 50% of the contractors were upper caste. In the 1920's, over 70% of all workers came from Manbhum* and contiguous districts. In the 1930's this proportion fell, due to the replacement of Adivasis# by migrants from Gangetic Bihar, central India and up-country, who were more ready to use explosives.⁵⁶

The *raising contractors* took commissions for supervising the process from recruitment to loading, and were responsible for about half of the output. The *zamindar* status of some gave them leverage.⁵⁷ Older collieries possessed service tenancies - the Bengal Coal Company held 130,000 acres in 1920, and the EIR leased lands to miners who were liable to work for 230 days a year. In 1931 landed persons were still obtaining recruitment contracts, but by 1945 the raising contractors' share

⁵² In an address to the IMF in 1929, A.L. Ojha spoke of "a merger and combination of isolated small undertakings", and suggested an Indian version of the German Federal Economic Council, "for a better adjustment of our... rapidly changing economic life": *Searchlight*, 3/3/29; and Simmons, 'Indigenous Enterprise', pp. 200-215.

⁵³ *COI*, 1921, vol 7, part 1, p. 275.

⁵⁴ *COI*, 1921, vol 7, part 1, chapter 12; *BLEC*, vol 1, p. 17, & vol 4, part-C, p. 199. Managements may have deflated the figures out of a desire to renege on housing responsibilities.

⁵⁵ These terms are used in the Table: "Most Numerous Castes in the Jharia Coalfield": *COI*, 1921, vol 7, part 1, chapter 12. The proportions relate to 73,241 'actual workers'.

⁵⁶ *RCL* vol 4, part 1, p. 3-4; *BLEC* vol 2 A-B, pp. 307-311; and *Searchlight*, 27/3/36. *Manbhum was Jharia's home district. #The term *Adivasi* ascribes a collective identity to the tribal population. Adivasis still dominated the workforce in Raniganj.

⁵⁷ *RCL* vol 4 part 1, pp. 220-1, 242; *BLEC* vol 4-C, p. 266.

had fallen to a quarter of total output; the Railways still finding it profitable.⁵⁸ Certain lesser contractors recruited through *sardars*, or group leaders, in a nexus which included village headmen. The *sardars* led gangs around the coalfields, supervising work and the receipts of wages. They took commissions as well as cuts on individual piece rates.⁵⁹ Miners preferred *sarkari* (official) ie, direct recruitment by the company.⁶⁰

Upto a quarter of Jharia's miners were settled. 'Recruited', (seasonal) workers comprised 50% to 75%; and 'local' workers, 5% to 10%. The former lived in dingy quarters called *dhowras*, and went home to recuperate every few months. In the 20's and 30's some companies had stabilised between 50% to 75% of their workforces, but absenteeism (April-May for marriages, July-August for paddy plantation, and November for the harvest), affected them too. Annual turnover varied from 45% to 70%.⁶¹ High recruitment costs were linked to elastic labour supply. Between 1880 and 1920, rice prices rose by 150% and Chota Nagpur suffered five famines and an influenza epidemic (1918). Yet population grew faster than the provincial or national rate. This was related to an expansion of the arable under an agrarian regime vulnerable to climate and available irrigation. 75% of its population was indebted, and the main recruiting areas were monocrop zones. The village hut and *dhowra* thus became adjuncts of proletarian households in which the rural location of the one effected savings on municipal infrastructure in the other.⁶²

⁵⁸ Simmons, 'Recruiting and Organising' p. 465, 471-481. Also, *RCL*, vol 4, part 2, p. 143, vol 4, part 1, p. 221; and Report pp. 118-119. The RCL recommended the 'gradual supercession' of the system.

⁵⁹ *BLEC*. vol 3-B, Book 3, pp. 63, 67, 158, 212, 243, 245, 249, & 330. On gang-masters, see Karl Marx, *Capital*, vol 1, p. 851. "Coal mining was among the most individualistic of occupations as far as direct and continuous supervision was concerned, which helps explain the fact that so much underground management devolved into a matter of financial incentives or brutal management": Barry Supple, *The History of the British Coal Industry*, Clarendon Press, Oxford, 1987, p. 431.

⁶⁰ *BLEC*. vol 1, pp. 188-9. Recruitment patterns in China: *wai-kung* (external labour) and *li-kung* (internal labour), corresponded to the *sardari* and *sarkari* systems. The former preponderated: J. Chesneaux, *The Chinese Labour Movement*, Stanford, 1968, p. 58.

⁶¹ *RCL*. vol. 4, part 1, pp. 16-17, 182, 207, 212; Radhakamal Mukerjee *Indian Working Class*, Hind Kitabs, Bombay, 1951, p. 24-26; and Seth, *Labour*, p. 53-56.

⁶² In 'Coolies and Colliers: A Study of the Agrarian Context of Labour Migration from Chota Nagpur 1880-1920': *Studies in History*, vol 1 (2), 1985, Prabhu Mohapatra analyses the area's 'conjuncture of crisis'. The RCL noted the utility of the rural connection for nurturance and old age : *RCL*. Report, p. 19.

The anthropological knowledge of the managers was a mixture of racial stereotypes and ideas about the suitability of specific castes for various types of work. 'Aboriginals' were considered diligent in the tea gardens, but generally slack in the collieries (though Santhals were considered good miners). Stereotypes also reflected workers' behaviour, a phenomenon which has prompted research into the adaptability of the workforce to different work processes. Members of larger tribal groups avoided the coalfields: Santhals were the only prominent group in both places. Up-country workers stayed longer to make savings, and adjusted better to mining than 'seasonal' peasants. With their tradition of jungle clearing, tribals probably preferred the tea-gardens.⁶³ However, small mines were used to an unstable workforce and during World War I, 'seasonal' Adivasi miners flocked to these because they preferred shallow workings: "their fear and apprehension about the deep mines have been graphically portrayed in folk songs".⁶⁴

The stereotypes (to which officials, trade-union literati and contractors also subscribed), reinforced structures of employment and suggested attributes according to which certain Indians were cast for the role of miners. The Report of the Labour Enquiry Commission of 1896 contained a section entitled *What Castes will make the best miners*. It named certain poor peasant communities from the North-West Provinces (modern Uttar Pradesh) with the warning that "*Pasis..* are by nature troublesome and require careful handling." Although 'aboriginal' workers were known for dexterity in hewing coal, they were "only anxious to earn enough to live on", "live emphatically for the day", and were "far too lazy".⁶⁵ A manager in 1894 was in no doubt that "*Bauris* are dirty and have no moral courage" and that "*Sonthals* are brave but

⁶³ Mohapatra, 'Coolies and Colliers', pp. 261-266.

⁶⁴ 'A Study of the Labour Movement', by Ranjan Kumar Ghosh, ch 1.13. Declining contractor's rates in the mid-30's caused a fall in up-country recruitment.

⁶⁵ *RLEC*, pp 13-17. Regarding a suggestion that Chinese labour be imported into the coalfields, the *Report* commented: "... (the Chinese) are very clannish, and given to create disturbances unless kept down with a strong hand... experience of the importation of Chinese labour in other countries has abundantly shown that John Chinaman has no intention of doing hard manual labour a day longer than will suffice him to have acquired the knowledge and the small sum of money necessary for him to start as a skilled workman.. a work-supervisor or shop-keeper." p. 17.

stupid".⁶⁶ An article on labour written in 1913 repeatedly uses terms such as 'semi-savage' and 'low-class Hindu gipsy tribe', and contains the remark, "There are probably no other coalfields in the world where the habits, peculiarities and superstitions of the labour force have more to be studied than in ours" - in this case he was referring to the value of ethnographic knowledge for "the Manager who wishes to attract and keep his labour", with their "varying idiosyncrasies". Thus, *Lodhs* were "not so stupid as the Bengal working races", *Pasis* were "generally under the surveillance of the Police", *Beldars* were "a dirty race and will live anywhere... their women are great carriers, being accustomed to this work from childhood".⁶⁷

The article went on to explain the *Santhals'* aversion to living in the *dhowras* by way of an anecdote. We learn that some miners had interpreted the deaths of two of their mates as the work of devils residing under the floors of their quarters. These were dug up and exorcisms performed on the orders of the manager, whose pragmatism for falling in 'with the superstition of the men' to prevent the migration of the gang is praised by the author, who went on,

It is chiefly on account of this and other superstitions that the above races do not prefer to live in barrack-like houses with pucca floors, though as time goes on and the younger generation gets more civilised, the present objection will probably pass away.⁶⁸

An interesting example of managerial 'altruism' regarding the civilising effects of labour may be found in an Indian manager's suggestion in 1918 that the recruitment of convicts for mining work "would fetch a very good income for the Government, (whilst)... improving their morality and... decreasing crime."⁶⁹

⁶⁶ Communication from Walter Saise, E.I.R. Colliery Manager, Giridih, in *Report of the Inspector of Mines in India for the Year Ending the 30th June 1894*, Calcutta, 1894, pp 51-53.

⁶⁷ E.C. Agabeg, 'Labour in Bengal Coal Mines', *TMGI*, vol 8, 1915, pp. 25-38.

⁶⁸ Agabeg, *ibid*, pp. 37-38. The *dhowrahs* were cramped, unventilated, back-to-back dwellings constructed by coal companies for housing their labour force.

⁶⁹ Evidence of D.N. Das, General Manager of Bannerjee & Co., in *Rees*, 1919, 78.

The prejudices of the managerial class affected such matters as the design of miners' dwellings. The architect's scheme for a housing plan published in 1918 kept "the different castes separate from one another", and in accord with the observation that "Santhals and Koras (have) an aversion to living in a line of attached huts", his diagram included discrete dwellings without pucca roofs for the *Santhal Dhowrah*, in contrast to the unbroken line of *dhowrahs* for the *Bauries*, *Kahars* and *Gopes*. The plans also showed a well for the Santhals and Koras as "they will not take drinking water from the stand-pies". The accompanying text also stated that it was the "labourers' insanitary habits" and trips to their villages which conduced to the unsavoury state of housing - the author apparently being unwilling to consider that the causal logic might have worked the other way.⁷⁰ However, one of the most telling instances of class/caste racism in mines employment is to be seen in the recommendation of a mine manager in 1894 that regulative policy ought to endorse the hereditary immobility of certain 'low castes':

a child of 8 years is fit to work... both little girls and little boys should go into the mine early and become accustomed to carrying coals... it is questionable whether children should be educated, for it would, on the whole, make them more miserable... they would not, afterwards work as coal-cutters, but try to get other work... *those who can read and write will never cut coal; on the other hand, they take a most important attitude, and demand respect from everybody...* (emphasis added).⁷¹

Juxtaposed to the notion that certain social groups deserved to be kept illiterate lest they ceased flocking to the mines, was the corresponding idea that it was their inherent stupidity that conduced to the persistence of backward techniques of extraction. Thus, commenting on proposals to introduce longwall mining the head of the Geological Survey of India opined that "for anything of this kind greater skill and greater care is necessary in the laborers employed; and unless the stupidity of the Native workmen and their abhorrence of change can be overcome, or unless machinery can be

⁷⁰ "Housing of labour and sanitation at mines in India", with attached plates, J.H. Evans, (Seetulpore Colliery, Disergarh): *TMGI*, vol 12, 1918, pp 79-89:

⁷¹ Communication from Walter Saise in *Report of the Inspector of Mines...* pp 51-53.

introduced for the purpose of cutting coal, there is little chance of any alteration."⁷² Needless to say, it was hardly the sudden outbreak of cleverness among the Natives that induced the mining companies to introduce a degree of mechanisation in the first decades of the 20th century. In 1933, mineowners could still insist that "the Indian coal miner is, generally speaking, an aborigine, whose ethical concepts -or want thereof- would not give him an understanding to the need of an honest effort in return for a provided wage".⁷³ These stereotypes meshed in with the processes of state regulation and may have been related to the slothfulness which characterised the enactments of legislative protection for mining labour. Factory Acts were passed in 1881 and 1891, but the first Mines Act appeared only in 1901, because "legislative interference would tend to hamper the development of the industry which was yet in its early stage".⁷⁴ As late as 1946 an official report written by an Indian considered the aboriginal areas a source for "an ample supply of poor and illiterate people, willing and docile but hardly capable of sustained and hard work".⁷⁵

Female Labour and Gendered Work

From the outset, women were a crucial component of the colliery workforce. They performed tasks involving the expenditure of simple manual labour such as gin-winding, loading, carrying and screening coal, bailing water, pushing tubs and cleaning boilers. The common parlance of the workplace was imbued with gender - women coolies were called *rezas* and in their capacity as loaders attached to male hewers, were known as *kamins*, a term signifying the performance of service. Gangs usually broke up

⁷² M. Fryar, "Paper on Defects in the System of Work in Bengal Collieries" (unpub), April 1869. India Office Library, File no. V/27/611/1.

⁷³ From the *Memorandum submitted by the Indian Mining Association in connection with the recommendations of the RCL in India*, in File M-1265 (14), of 1933, Department of Industries & Labour, N.A.I. It has been suggested that mine operators preferred up-country workers to local recruits because they tended to use lengthy sojourns away from home to make savings. They were thus seen as more productive and more suitable exponents of piece-rated work in comparison to the impoverished peasants from the immediate hinterland, who tended to be seasonal: Prabhu Mohapatra, "Coolies and Colliers: A Study of the Agrarian Context of Labour Migration from Chota Nagpur, 1880-1920"; *Studies in History*, vol 1(2), 1985. pp. 261-266.

⁷⁴ Parliamentary Paper on the Employment of Women and Children in Mines, 1893, quoted in D.R. Gadgil, *The Industrial Evolution of India in Recent Times*, O.U.P., Bombay, 1971. (First edition 1924), p 84-85.

⁷⁵ ICC, p. 114.

into pairs, the hewers or *malkattas* cutting the coal, and the *kamins* walking long distances with baskets on their heads to load it. "The gin-women", we learn from a report written in 1869,

are said to be much more capricious in the matter of attention to their work than the men are. In many cases they are completely masters of the situation; as if they refuse to work, the hewers and other underground operatives cannot descend to their places of work, nor can coal be raised to the surface. The use of steam machinery will, however, obviate this difficulty when, by improved arrangements for subterranean and surface transport of coal, the work becomes sufficiently concentrated for (its) economic employment...⁷⁶

The prognostication linking the advent of machinery with the replacement of females was correct, but took much longer than its author might have surmised. Till the time of the 1921 census, a fifth of the coal hewers were women, as were nearly half of the coolies, loading and carrying coal above and below ground.⁷⁷ They were invariably paid less than males doing the same jobs -in the 1850's they earned two-thirds of the daily wages of male workers, and by the mid-1930's, at the height of the Depression and the overproduction crisis in coal mining, they were drawing in some cases, less than half the male wage.⁷⁸ Gender influenced the determination of jobs as well as remuneration, and was an influential factor among workers as well as management. The 1896 enquiry reported that men generally refused to carry and load coal - in the case of the up-country miners this created a special difficulty, as many of them came to the coalfields singly and needed the assistance of women and children of other castes to do their loading. We learn that "Sonthalis in particular are so jealous concerning their women that they will not allow them to carry coal for other coal-cutters."⁷⁹ A partial survey in 1924 revealed that nearly 80% of women in the coalfields worked alongside their

⁷⁶ Fryar "*Paper on Defects...*", p. 13.

⁷⁷ See Subsidiary Table 12, in *COI*, 1921, vol 7, part 1, chapter 12.

⁷⁸ Seth, *Labour...*, p. 138.

⁷⁹ *RLEC*, p. 16

husbands or male relatives.⁸⁰ The gendered gradation of work by miners themselves was not an unusual phenomenon. Before the Act of 1842 prohibiting women's work in mines in Britain, all the carrying work in Scottish mines was done by women and girls, "as miners regarded the jobs too degrading for men".⁸¹

Women formed 37.5% of the workforce in 1920. This fell to 25.4% in 1929, the year that the central government ordered the gradual exclusion of female labour from underground work. It declined further to 13.8% in 1935 and 11.5% in 1938. This trend was linked to the mechanisation of loading, hauling and screening and the eclipse of Adivasi family labour - *rezas* were predominantly tribal. A contributory factor was the slump in coal prices in the mid-thirties, and the resultant closures of several small and under-mechanised enterprises, which employed a number of women.⁸² Why did the GOI take so long to ban the employment of women underground, 90 years after their British counterparts? Describing the confabulations preceding the passage of the Mines Act of 1923, the author of an official treatise on industrial policy noted that the "exclusion of women from mines" was "the most important question which came before them". Although Government had possessed the power to prohibit the employment of women underground for over twenty years, "*the extent to which coal mining in particular depended on women's labour* had stood in the way of action, and the development of the industry which had steadily added to the female labour force had steadily increased the difficulties along the way" (emphasis added). The Committee decided that immediate exclusion was impracticable and employers be given time to make the necessary adjustments. The Bill conferred the power to exclude women on the GOI rather than local governments, and recommended consultation with the latter "with a view to prohibiting such employment... at the end of a specified period... (of) about five years". However, the local authorities were recalcitrant. In the main coal areas there was vigorous opposition and Bengal, Bihar & Orissa, and the Central

⁸⁰ Seth, *Labour...*, p. 153.

⁸¹ Roy Church, *The History of the British Coal Industry, volume 3, 1830-1913, Victorian Pre-eminence*. Clarendon Press, Oxford, 1986, p. 191.

⁸² *RCL*, p. 127; Seth, *Labour...*, pp. 140-1; and Mukerjee, *Indian Working Class*, p. 82. Other statistics on coal for British India put the number of women workers for every ten males at 5.6 in 1915, 6.1 in 1920, 4.8 in 1925, 2.7 in 1930 and 1.6 in 1935, rising to 3.6 in 1944, the year after the ban on female labour underground was lifted temporarily. *Deshpande*, pp. 18-19.

Provinces were agreed that the measure was premature. They agreed with its desirability at some future date, "but there was strong opposition to the fixing of a date and an almost entire absence of constructive proposals".⁸³

The exclusion of women from coal mining was a worldwide trend which accelerated under the aegis of the ILO. In 1938 it reported that only in three countries was there an appreciable number of women in such employment: Japan (10%), British India (14%), and the USSR (22%). It is also the case that severe fluctuations in the size of the coal mining workforce was a global trend, linked with the post-war slump in demand, the increasing use of petroleum and increasing productivity coupled with mechanisation.⁸⁴ It is clear that in India the structural reasons for the continued and widespread employment of women in mines overrode demands for its prohibition based on considerations of hygiene, family values and 'morality'.⁸⁵ The compulsions which made managements hostile to the idea were translated into a conservatism on the part of the male workers, who would have to hire male loaders. B.R. Seth, an economist attached to the Bihar Labour Enquiry Committee and sympathetic towards working people, stated that the conditions of underground work were in some cases better than those prevailing on the surface or in quarries, that the Mines Board of Health had opposed the exclusion of women from underground work and that the family system assured women of adequate protection. He felt rather, that the measure had actually exacerbated the disruption of family life, prostitution and drunkenness in the coalfields.

The measure was only ordered when the mechanisation of important ancillary tasks had already proceeded apace, resulting in a decline of the family system of working and when the industry was in a crisis of overproduction. It had the effect of causing competition among women and men for jobs which till then had been unpopular with males, forcing wages down still further. It was also opportune. In the words of one

⁸³ A.G. Clow, *The State and Industry - A Narrative of Indian Government Policy in Relation to Industry under the Reformed Constitution*, G.O.I., Central Publication Branch, Calcutta 1928. pp 153-155.

⁸⁴ *The World Coal Mining Industry*, vol 2, I.L.O., Geneva 1938, pp. 7, 10, 11.

⁸⁵ Commenting on the ban, the Royal Commission on Labour opined: "The release of so many women of the miners' families from the industry should make possible the raising of the miner's standard of home life, with a consequent increase in their efficiency...": *RCL*, Report p 128.

manager, "At present, there is an over-production of coal and if, by withdrawing the women, the output drops by say, 20 per cent, it is bound to react on the market: prices should rise and the trade generally improve".⁸⁶ B.R. Seth had noted that "cheap female labour (was) nothing short of a subsidy to the industry". The fact that he put this forward as an argument against the ban demonstrated his failure to see that women continued to subsidize the costs of colonial energy extraction even after being prohibited from working underground - by virtue of the downward pressure they exerted on wages on the surface. In fact, it was found that the measure resulted in an increased numerical disparity of the sexes, a larger number of single males seeking commercial sex and a 40% decline in family incomes (this was also related to an all-round decline in real incomes).⁸⁷ During the War, a labour shortage caused the government to lift the ban in 1943. This led to some 19,000 women being employed in the pits in 1944. In 1946 the ban was re-imposed, but the Labour Investigation Committee took the opportunity to state that in its opinion, "the beneficial effects anticipated by the Labour Commission (1931) as a result of the ban... did not materialise".⁸⁸

Living and Working Conditions

Exhaustion and inebriation characterised miners' lives, and absenteeism was high early in the week.⁸⁹ The legalisation of outstills in 1932 cheapened liquor by upto 75%, and increased revenues. By the mid 1930's owners were complaining about the "drink evil".⁹⁰ Gambling, cock-fighting, and celebrating festivals were the main forms of

⁸⁶ *TMGI* vol 27, pt 2 1932. Comments by J. Thomas on R.R. Simpson's paper, 'The Social Conditions of Miners in India', p. 124.

⁸⁷ Seth, *Labour...*, pp. 150-151. The Deshpande Committee reported in 1946 that about 30% of the family incomes of miners was contributed by women: *Deshpande*, p. 20.

⁸⁸ *Deshpande*, pp. 18-19.

⁸⁹ Margaret Read emphasised "the harm done, particularly to the aboriginal population by the sale of spirits". *The Indian Peasant Uprooted*, London, 1931, pp. 119-120. In 1939 the BLEC saw drunken miners "tumbling down the road": *BLEC*, vol 1, p. 196. The unionist Mukutdhari Singh criticised Government for tolerating "such wilful destruction of a whole race". *BLEC*, vol 3-C, p. 227.

⁹⁰ Vol 2-A & B of the BLEC contains the results of a Budget Enquiry covering 1030 families, two-thirds of whom spent 16% of monthly incomes on liquor. 94% consumed tobacco: *BLEC* vol 1, p. 196. Muslims showed a high expenditure on tobacco. Manjhis, Dusadhs and Bauris were reportedly "the most regular drunkards". A unionist put liquor expenditure at 25% of incomes. Inebriants included *handia* (rice beer), toddy, opium, *ganja* and *bhanga* (hemp): *BLEC*, vol 2-A & B, p. 366, and vol 4-C, p. 271. The decision on

recreation. Colliery workers tended to live in clusters according to caste and place of origin, some, like the Santhals preferring not to use the *dhowras* at all.⁹¹ Nearly three quarters of expenditure was on food. Health and educational facilities were poor and infant and female mortality higher than for the province. The overcrowded residential lines were subject to land subsidences. There were no baths or latrines. During shifts, infants were left with co-tenants, or taken along and kept opiated.⁹² 44% of the families were reported indebted to *sardars*, contractors, shopkeepers, clerks, and usurers; among the worst debts being contractors' advances. Their stores charged exorbitant prices from which miners would be pressurised to buy essential items. Hard pressed miners would stealthily migrate.⁹³

In 1940 there were 8300 electric miners' lamps in use in India, and only 74 mechanical ventilators in Jharia. Most miners used open kerosene lamps called *kuppis*, and drank subsoil water. Underground defaecation spread hookworm through bare feet, and first aid kits were scarce.⁹⁴ The working week lasted on average about four and a half days. In 1934 many pit workings were 12 hour, and double-shift, with some collieries working three. The RCL interviewed miners who spoke of 16- and 20-hour shifts. Although the amended Mines Act of 1935 provided for 9-hour shifts underground and a 54-hour week, in 1937 actual hours worked in Jharia were stated to be 45.⁹⁵

outstills caused liquor consumption to rise from 30,924 gallons to 376,000 gallons between 1931 to 1933. In 1940 there was no evidence that prohibition, introduced in 1939, had curbed drunkenness: Seth, *Labour*, pp. 243-5, 251.

⁹¹ See 'A Study of the Labour Movement', by Ranjan Kumar Ghosh, ch 1.15, and 1.14.

⁹² *BLEC*, vol 2-A & B, pp. 353-357; Mukerjee, *Indian Working Class*, pp. 223-229; and Seth, *Labour*, pp. 164, 168, 176-178, 190 & 198.

⁹³ *Searchlight*, 27/3/36. Prof S.R. Bose's lecture. The BLEC reported peons and shopkeepers arranging with mines clerks to collect usurious dues at source. *BLEC*, vol 1, p. 160; Also see vol 2-A & B, pp. 442-443; and vol 3-C, p. 229.

⁹⁴ Ghosh, *Coal Industry*, pp. 148, 152-154; Seth, *Labour*, p. 30; and Margaret Read, *Indian Peasant Uprooted*, p. 123. The lack of stretchers could aggravate bone injuries. The problem was made worse by the absence of pit telephones.

⁹⁵ Miners Patia Ghatwan and Kale Lohar told the RCL they found 5 days work too tiring. One manager professed surprise at figures in his register which showed 73 working hours per week: *RCL*, vol 4 part 1, pp 58-59; vol 4 part 2, pp. 106, 121-2, 245, 281, 127, 122 & 116; and *BLEC*, vol 1, p. 72. Till 1934, hours of work were regulated by the Mines Act of 1923, which recognised a weekly limit of 54 hours underground, but did not forbid 12-hour shifts: Seth, *Labour*, p. 110.

Wage rates varied upto 50% in adjacent collieries depending on the nature of the seams. Ventilation, tub-availability, the hardness of the seams and gallery dimensions would affect miner's attitudes: harsh conditions required more rest.⁹⁶ Gangs could be overstaffed to absorb excessive labour supply, reducing individual earnings. A day's work by a miner and loader produced 2.6 to 3 tubs. In some cases, supervisors earned a bonus on output exceeding standard-load multiplied by the number of tubs filled - a blatant incentive to cheat.⁹⁷ In the mid-30's many mines were working short weeks, and despite the falling cost of living, earnings fell from 40% to 80% between 1923 and 1936. The exclusion of women from underground in 1937 reduced family incomes.⁹⁸

Miners complained about tub shortages. If they cut coal without tubs on hand, they risked losing it. The shortage bred atomisation and graft, with bribes going to sundry superiors. Deductions included fines for stones in the coal, for sleeping or coming late, 'donations' for cow-shelters in Gujarati-owned mines and the cost of explosives. A third of earnings could be lost this way.⁹⁹ The wellspring of these cesses was the tub of coal, but then owners paid the *zamindars*, contractors bribed company executives and *sardars* paid clerks to get at suitable seams. The practice of *salami* payments, which combined obeisance with extortion, bathed the collieries in a feudal tint and signified the nexus within which fuel was produced for the colonial system.

Transfixed by their physical productions, the miners adapted easily to piece-rates, that

⁹⁶ Seth, *Labour*, pp. 61-67. The RCL singled out the Railways' collieries in Giridih for unhealthy working conditions: *RCL*, Report, pp. 115 & 134.

⁹⁷ *RCL*. vol 4, part 1, pp 58-59, 206, & 216. The standard tub size was 30 cubic feet, but collieries used sizes from 27 to 40 cubic feet. 13 cwt of coal was the standard load, but this also varied, giving clerks scope for under-assessment: Seth, *Labour*, pp. 116-117; *BLEC* vol 4-C, pp. 253-255. The RCL recommended weighment and tub-uniformity, (Report, p. 123) but in 1939 no managements used to weigh machines. Workers resisted innovations such as double-headed picks and tin lamps, and looked upon weighing machines "as an invention of the evil one": Seth, *ibid*, p. 9.

⁹⁸ In 1929 the typical household earned upto Rs 30/- per month; in 1939, between Rs 17/- and 21/-. Rates were the lowest in the Indian-owned mines, higher in Joint-Stock concerns, and highest in Railway collieries: Seth, *Labour*, pp. 65, 71-73, 77, 97-99; and *BLEC*. vol 1, p. 200; & vol. 2-A & B, p. 352.

⁹⁹ Seth, *Labour*, ch. 5 & 7; p. 79, p. 112; *RCL* vol. 1, p. 121; and *BLEC*, 4-C, p. 246.

"most fruitful source of reduction of wages".¹⁰⁰ Owners argued that miners were content with the earnings of a short week; that better wages would be detrimental, as workers would drink and borrow more. On the adjustment of wages to cost of living, the IMF responded, "the wages of miners are controlled by the miners themselves... when wages were increased... (they)... put in less work".¹⁰¹ The representation was disingenuous, for as the BLEC noted, "the most important cause of his low earnings is the wage-rate itself".¹⁰² When the RCL recommended a minimum tub-credit, the owners protested : "it is only by the piece system that it is possible to get any useful effort from the aborigine miner".¹⁰³ Disavowing responsibility by citing the existence of raising contractors, the Inspector of Mines and the Railway Board endorsed the opposition of the rail companies. The GOI rejected the recommendation in 1933.¹⁰⁴

Piece rates were the crux of the industry. Along with mediate supervision they were a buffer between workforce and owners. Workers could be dismissed with ease, wages reduced, and fluctuations in labour supply obviated with reserves of raised coal, processes which enabled the cheap extraction of a strategic commodity.¹⁰⁵ The 1946 Report recommended that "a fair wage to labour should form the starting point for price fixation".¹⁰⁶ However in an industry whose wage-cost was between 40 and 75% of the total cost, "the lack of organisation in the labour force" transmitted the impact of

¹⁰⁰ Karl Marx, *Capital*, vol 1, p. 694.

¹⁰¹ See *RCL*, vol 4, Pt 1, pp 217, 247, 233, 254-5. The Mine Managers Association, however, stated: "wages paid have no relation to the profits earned", and that improved conditions would increase output. Also see *BLEC*, vol 4-C, p. 273; and vol 3-B, Book 3, p. 59.

¹⁰² *BLEC*, vol 1, p. 202.

¹⁰³ *RCL*, Report, p. 122; 'Memorandum submitted by the Indian Mining Association': File M-1265(14), 1933, Dept of I&L, NAI.

¹⁰⁴ Comment dtd 20/5/32 by the Chief Inspector of Mines in File M-1265 (14), 1933, Dept of Industries & Labour, NAI; and Order by A.G. Clow, dtd 1/11/33, in File M-1265 (14), 1933, Dept of Industries & Labour, NAI. On 17/8/33, the new Inspector admitted that wages could be "deplorably low", but opined that statutory raises would lead to closures, and an increase in unemployment - a strange argument, given the notoriously unstable patterns of employment.

¹⁰⁵ Even when the raising contractor system began to decline, in the mid 1930's, recruiting and gang *sardars* remained, along with the piece rates.

¹⁰⁶ *ICC*, p. 268.

falling prices onto wages.¹⁰⁷ The lacuna symptomised the context within which coal was mined in India : it was the spatial and temporal proximity of the workers to their villages, as well as privation which engendered low levels of organisation and the acceptability of downwardly fluctuating wages.¹⁰⁸ Castells' juxtaposition of immigration and the existence of low-paid jobs is pertinent here.¹⁰⁹

Dire Predictions

The year 1920 marked the beginning of a decline in mining, interspersed by a brief revival during 1927-30. With the global price collapse in 1923, the industry resorted to 'slaughter mining', further depressing prices. Between 1926 and 1935, output in 9 major companies rose by 80%, whereas depreciation costs, raising costs and wages fell by 66%, 46%, and 45% respectively. Accidents increased.¹¹⁰ A Subsidence Committee of engineers working from 1929 to 1935 warned that if strict control of gallery height and initial extraction, along with sand stowing were not enforced, collapses and combustion were inevitable. The 1937 report noticed risks being taken "which would not have been possible with less ignorant labour", and estimated 'avoidable waste' in the two fields at 50%.¹¹¹ The functional effect of erratic forms of capital was manifest. There was a growth in casualties and four major accidents occurred in mines run by the Railways and Agencies. Meanwhile Indian magnates attributed the "alleged bad methods of mining" to the failure of the GOI and the public to improve the "economic condition" of the industry.¹¹²

¹⁰⁷ Ghosh, *Coal Industry*, p. 189.

¹⁰⁸ The 1928 Settlement Report for Manbhum stated that mineowners used settlement attestation to convert the status of miners to service tenancies. It also reported an increase in the numbers of 'landless aboriginals': see Simmons, 'Recruiting and Organising', pp. 469-471. Also see *BLEC*, vol 1, p. 175.

¹⁰⁹ "Immigrant workers do not exist because there are 'arduous and badly paid' jobs to be done... arduous and badly paid jobs exist because immigrant workers are present or can be sent for to do them": Manuel Castells, 'Immigrant Workers and Class Struggles in Advanced Capitalism': in Cohen, Gutkind and Brazier (ed), *Peasants and Proletarians: The Struggles of Third World Workers*, Hutchinson, London, 1979, p. 365.

¹¹⁰ Ghosh, *Coal Industry*, pp. 63-67; *CMC*, 26; *ICC*, 20-21, 118. See Table II, below.

¹¹¹ *CMC*, pp. 27, 35-41.

¹¹² Statement by A.L. Ojha of the I.C.O.A., *Searchlight*, 14/10/36.

An officially hosted seminar in 1929 apprehended the looming crises. The discussions centred around a paper presented by the Chief Inspector of Mines, Simpson, which argued that if conservation measures were not undertaken forthwith,

the future of the Jharia coalfield is gloomy indeed. The loss of fully one-half of the coal will be inevitable. Already much of the surface has been broken by the extraction of pillars... Year by year the areas of workings lost on account of collapses and fires are extending.¹¹³

Simpson suggested raising funds by reducing production costs, closing poorer mines and through co-operative technical operations. The seminar acknowledged the 'unparalleled wastage' but it was asked why State Railways did not work their mines on the lines being suggested, and why the GOI did not implement the proposals "laid down by their own Committee" (Treharne-Rees). Average property sizes in Jharia were held to be too small to afford labour-saving machinery, and given the low selling price of Jharia coal (averaging Rs 4/- per ton in 1927), sand stowing was deemed impossible. One participant stated that the competition mounted by Railways' collieries "directly enhanced the wastage of coal by lowering the selling price, and so making cheap mining indispensable to profit earning".¹¹⁴

In 1930, the Indian Mine Managers' Association asked the GOI to enforce sand-stowing, "without which there is every chance of subsidences and fires".¹¹⁵ Such proposals had previously been abandoned on account of stated financial hurdles and the problems of imposing standard cesses. In this instance, opposition from the industry was also cited.¹¹⁶ A senior official noted that "the present low selling price of coal is ascribed partly to competition with Railway-owned collieries... producers

¹¹³ R.R. Simpson, 'The Future of the Jharia Coalfield'; and 'Discussion on Mr Simpson's Paper'; *TMGI*, vol XXIV, 1929-30; pp 110-114; 114-146; and 226-257; appended in File 76 (18), 1931, Dept of Industries & Labour, N.A.I..

¹¹⁴ J.E. Phelps' comments on R.R. Simpson's paper, in *ibid*, p 140.

¹¹⁵ File M 76 (19), 1931, Dept of Industries & Labour, N.A.I... Letter from J.K. Dholakia, Association President, dtd 19/9/30.

¹¹⁶ File M 76 (19), 1931, Dept of Industries & Labour, N.A.I... Notes dtd 23/1/31, and 7/3/31.

apparently consider that if the Govt. wish to conserve their supplies of the best grade coals, it is for the Govt. to pay..., they being concerned with immediate profits".

Estimating that freight rebates alone would cost the railways a 4-million-rupee annual reduction in earnings, he ruled subsidised conservation "out of the question, especially during present financial stringency". He drew comfort from the fact that high grade coal reserves in India were calculated as sufficient for over a century.¹¹⁷

Miners' Movements.

Miners' behaviour patterns and their repercussions also affected the structure of the industry. The Mines Board of Health was created in 1914, after miners had put the mines into "a state of dissolution", by departing silently in the event of deaths due to cholera.¹¹⁸ Low-key methods of resistance included leaving empty spaces at the bottom of the tubs, and cheating on advance food allowances, by taking it from more than one colliery and avoiding work.¹¹⁹ Nor did they always remain placid.¹²⁰ In 1930, miners of the EIR's captive collieries staged lightning strikes over a period of three weeks demanding an end to the *sirdari* system and differential rates, shutting down six pits employing 3423 persons. They complained about extortion, and demanded allotments of free coal, railway tickets, loans and paddy lands.¹²¹ No union was involved - it is noteworthy that the workers-initiated sympathy strikes and picketting. In 1934 the Railways' captive mines called for fresh contractors' tenders. These were so low that the Superintendent believed that their implementation would reduce wages 'far below the irreducible minimum'.¹²² Several contractors were denied renewals, and two intervened

¹¹⁷ File M 76 (19), 1931, Dept of Industries & Labour, N.A.I.. Comments by the Chief Inspector of Mines, dtd 1/4/31, and by (signature illegible), dtd 10/10/31.

¹¹⁸ *RCL*, vol 4, part 2, p. 179; and vol 4, part 1, p. 234; Mukerjee, *Indian Working Class*, p. 26; Seth *Labour*, p. 53-56.

¹¹⁹ *BLEC*. vol 3-B, Book 3, pp. 246, 250 & 282.

¹²⁰ For more information about miners' movements in the 1920's and 30's, see 'A Study of the Labour Movement', by Ranjan Kumar Ghosh, and chapters 4.5; 6 sec. 2; 8.8; 8.11; and 9.11 of my *Politics of Labour*.

¹²¹ File 53/30. Letters dtd 8/2 & 11/2, Reports II and III, dtd 11/2, & 12/2. Also see *RCL*, vol. 4, part 2, pp. 340-366.

¹²² *N.M. Joshi Papers*, Nehru Memorial Museum & Library, File 71, Letter dtd 11/12/33, P.C. Bose to Railway Board. The Indian Miners Association stated that government's sole concern was to cheapen liquor and increase the number of grog shops.

in the subsequent agitation. Rates were reduced, obliging the *sardars* to lessen their tub commissions or squeeze their gangs. In mid May, miners and *sardars* assaulted an overman and smashed the manager's office. Police opened fire, and two miners were killed.¹²³

Similar changes caused tension in the Railways' Bokaro colliery whose workers were mainly migrants. The old contractors bid 33% lower rates in January 1934, but outsiders went lower. Convinced that wages were at "bare subsistence level", the district officer remarked that "labour unrest is not a factor by which (the Railway Board) are influenced... the maintenance of a living wage for their labour is a matter which appears to merit some consideration".¹²⁴ The GOI responded that there was "no reason why the Railways should pay more than ordinary commercial concerns".¹²⁵ (Employers often cited lower rates 'elsewhere' to justify wage reductions). Over 5000 miners were discharged.¹²⁶ These developments show how mediate recruitment coupled with insecurity could reduce wage-bills. They also demonstrated the potential for identities of interest between *sardars*, miners, and raising contractors. A Council Member commented sharply on the whole affair:

I look on the Railway Board as a selfish and inconsiderate commercial concern and I think we must make it clear that they will be responsible for trouble if any sudden action is taken without consulting the local government.¹²⁷

In 1937, under a new constitutional system, nationalist ministries emerged across India, and in 1938 a labour offensive began. In Jharia lightning strikes erupted over which political leaderships then asserted control. One such was the strike of 2200

¹²³ Fortnightly Report-1, May 1934, NAI; and File 108/34, R.E. Russell's letter dtd 19/5/34.

¹²⁴ File 108/34. Russell's letter dtd 20/5/34.

¹²⁵ File 108/34. G.O.I. Home Department's letter dtd 7/6/34.

¹²⁶ File 108/34. Letter from Chief Mining Engineer, Railway Board, to Chief Commissioner, Railways, dtd 12/7/34.

¹²⁷ File 108/34. Bihar Government Member for Industries & Labour, J.T. Whitty's note dtd 24/5/34.

workers at the Badruchak colliery of Bird & Co, which began on September 26.¹²⁸ Miners here had complained of racist intimidation by the manager. Their demands, put out a week after the strike began, covered harassment and graft, working and living conditions, and maternity and old age benefits. Indian owners expressed solidarity with the British Agents, and the local administration (represented by an Indian official), was hostile. Congressman Abdul Bari's extreme speeches aroused the mining population as never before. *Rezas* armed with earthen pots and broomsticks appeared at the pickets. Pumping was disrupted, and sabotage attempted. Left-wing slogans and red flags alarmed the administration and moderate Congressmen, but Bird and Co. held out, though they hastily transferred the manager. The miners began to wilt - Newari Bhuini, the mother of a strike-breaker, spoke of starvation forcing her son back into the pits. The strike was finally settled by a moderate unionist on terms which withheld most of the demands.

The strike movement of the late 1930's and early 1940's achieved the recognition of popular unions such as the Congress-led Chota Nagpur Mazdur Sangh. In 1939 and 1940, local government took the initiative to settle conflicts between mining populations and owners and contractors. Employers were leaned upon to concede a war allowance, and a cess imposed to build a Welfare Fund. By 1946, over 60% of the workers of Jharia were being recruited directly - signaling the decline of mediate recruitment.¹²⁹

Of Civil Servants, Apple Orchards, and Social Control

The period 1937-1942 witnessed increasing demand and better prices. But the felt impact of inadequate plant replacement during the Depression, and a wagon-shortage, coupled with the movement of workers into better-paid ordnance jobs, led to a 4-million-ton shortfall between 1942 and 1943. The GOI stepped in with the Coal Control Scheme (1944), production bonuses and the Coalfields Recruiting Organisation, which contracted workers from up-country and housed them in fenced dormitories. The Defence of India Rules (1942) empowered it to enforce adjudication and prohibit

¹²⁸ This account is reconstructed from records in File 379/39.

¹²⁹ *Searchlight*, December 5, 9, 13 and 20, 1939; Mukerjee, *Indian Working Class*, p. 26; ICC, 251-253.

strikes. In 1943, women were permitted underground again. Jharia reached its highest production level of 16.59 million tons in 1945.¹³⁰

The GOI began investigating the disorganisation of the coal industry¹³¹ on the eve of national independence, when state legitimacy was undergoing radical changes. Until then coal policy was dictated by the strategic necessity of fuelling transport networks and the political/economic one of facilitating the operations of the Managing Agencies and allowing colonialism's rentier allies to exact ground-rent from coal-bearing lands regardless of the physical and social ramifications.

This overview also invites questions about the role of fossil fuels and transport in the industrial revolution; the historical character of colonialism; entrepreneurial attitudes towards technology and official regulations; and the meaning of social interest in bureaucratic discourse - the last of these being prompted by a reading of the official texts. If, during World War II the GOI changed from "a laissez-faire law and order administration to a large-scale interventionist machine"; with regard to coal, a Keynesian slant had appeared earlier.¹³² The 1920 Committee upheld the right of the State, "in the interests of the community, to step in and prevent the dissipation of the country's resources".¹³³ The 1937 report criticised the notion of an "'economic man' actuated by self-interest"...

¹³⁰ See B.M. Prasad, *Second World War and Indian Industry 1939-45*, Delhi, 1992, p. 71-74, 257-259; M. Kumaramangalam, *Coal Industry in India: Nationalisation and Tasks Ahead*, Oxford & I.B.H., New Delhi, 1973, pp. 47, 72-73; Simmons, 'Recruiting and Organising', p 457; and ICC, 20-21.

¹³¹ Coal distillation yielded metallurgical coke, road tar, naphthalene, combustible fuels, benzene and toluene, the chief ingredient of TNT. Yet the GOI did not arrange systematic usage - in 1945, only 18.25% of the coal consumed was being processed into coke, gas, tar, ammonia and light oils - the remainder being burnt as fuel - a wasteful proportion. The production of road tar in India was a bare 50,000 tons per annum. (ICC, 227-231).

¹³² Dietmar Rothermund, 'Problems of India's Arrested Economic Development Under British Rule', in Clive Dewey, (ed), *Arrested Development in India: The Historical Dimension*, Manohar, New Delhi, 1988, p. 8. From 1930 onwards, in order to widen the market for inferior grade coals, the Indian Soft Coke Cess Committee began promoting soft coke, the derivative used in domestic hearths. Refuting the popular notion that food cooked on soft coke was harmful, it propagandised against dung cakes and wood, quoting from the Bengal Smoke Nuisance Commission, and the Ahmedabad Special Committee on Smoke Nuisance to highlight their polluting effects in urban areas. (ICC, 47-48)

¹³³ Referred to in CMC, p. 102.

later economists visualise real men facing economic friction and influenced by mixed motives... the emphasis has shifted from wealth to welfare, self-interest has been diverted into social channels, and many economists now believe that the State is the only authority strong enough to correct and control the mistakes of individual activity. The result has been a world-wide trend away from the competitive ideal towards formulas of public control...¹³⁴

The report lauded Germany and France for state regulation of coal mining (the USSR did not figure), and remarked, "mineowners have been rather like greedy boys in an orchard biting out the sunny side of their apples and throwing the rest away. Apples can be replaced, however, while coal cannot".¹³⁵ In 1940, the BLEC criticised Agency management and over-production, asked for an investigation into the railway's role in downward price fixation, and citing state subsidies of coal exports in Britain, asked the GOI to discard its "faith in laissez-faire of the early days of capitalism".¹³⁶ The 1946 Report recommended the establishment of a National Coal Commission, citing the Tennessee Valley Authority, the British Coal Commission and the nationalisation of British coal. Its proposals presaged nationalisation in 1971-73 - the dates being a measure of the inertia referred to in this essay.

What deserves examination is the GOI's reluctance to practice what its commissions preached. The production relations through which coal was obtained were reified in the physical structure of the mines and their settlements, and impacted upon state policy. Commissions could investigate, but their appointment did not betoken a reformative urge. Commercially relevant recommendations were implemented, but on structural matters state policy "continued to be one of laissez-faire", and the industry encouraged this stance.¹³⁷ The Burrows Committee was appointed in the alarming glow of 1936. Its insistence on sand-stowing coupled with the labour upsurge of 1938 pushed the GOI towards limited safety measures in November 1939. But suggestions regarding wages,

¹³⁴ *CMC*, p. 96.

¹³⁵ *CMC*, p. 102.

¹³⁶ *BLEC*, vol 1, Recommendations, p. 205-206.

¹³⁷ *ICC*, p. 20.

working conditions, coal conservation and land leasing were ignored. "Many of the problems of the coal industry for which Mr Treharne-Rees and the Coalfield Committee had suggested remedial action in 1920 consequently persist to this day."¹³⁸ "This day" was 1946. The fire under Jharia remains unquenched.

(The witness withdrew).

`US Team to tackle fire in Jharia mines' -

Newsitem in *The Indian Express*, December 12, 1991.

`Dhanbad miners face gas threat' -

Newsitem in *The Times of India*, October 8, 1993.

`All trapped miners found dead' -

Frontpage headline in *The Times of India*, January 28, 1994.

"It is now 10 pm. Though we are trying to save ourselves, I do not see any chance of escaping the clutches of death which is closing in on us" -

Translated text of a note under the band of the wristwatch of Mukhi Dusadh whose body was brought out ca 4.30 am on January 27 1994, from the New Kenda colliery, Eastern Coalfields - *The Times of India*, January 28, 1994.

¹³⁸ ICC, p. 20.